AMENDMENTS

CLAIMS

1. (currently amended): A method in a data processing system, the method comprising the steps of:

receiving a request to generate a data model from a data definition file containing a data structure with a plurality of data elements, each data element having a name and a definition;

automatically generating a diagram for each data element, the diagrams having names corresponding to the data elements;

automatically determining whether an attribute in the data structure is associated with one of the data elements;

when it is determined that an attribute in the data structure is associated with one of the data elements,

automatically displaying a graphical representation of the attribute with the diagram corresponding to the one data element;

automatically determining whether the data structure includes a reference between two of the data elements;

when it is determined that the data structure includes a reference between two elements,

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automatically displaying a reference link from the diagram associated with a first of the two elements to the diagram associated with a second of the two elements;

automatically determining whether the data structure includes a group attribute identifying at least one of the data elements as group attribute member;

when it is determined that the data structure includes a group attribute,

automatically displaying a group symbol;

automatically displaying a first link between the group symbol and the diagram that is associated with the identified at least one data element; and

automatically displaying a second link between the group symbol and the diagram of the data element having the associated group attribute.

2. (original): The method of claim 1, wherein the data model is an XML structure diagram.

3. (original): The method of claim 1, wherein the data definition file is a Document Type Definition file.

4. (original): The method of claim 1, wherein the data definition file is an XML schema file.

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5. (currently amended): The method of claim 1, wherein the step of automatically determining whether the data structure includes a reference between two of the data elements comprises the step of automatically determining whether the name of the second element is within the definition of the first data element.

6. (currently amended): The method of claim 1, wherein the step of automatically displaying the second link further comprises the step of automatically determining whether the data element has the associated group attribute.

7. (currently amended): The method of claim 6, wherein the step of automatically determining whether the data element has the associated group attribute comprises the step of automatically determining whether the group attribute is within the definition of the data element.

8. (currently amended): The method of claim 1, further comprising the step of automatically storing information used to generate the data model in a graphical view file.

9. (currently amended): A method in a data processing system comprising the steps of:

receiving an identification of a data definition file having a plurality of data elements and a plurality of relationships between the data elements, each data element having a name and a definition; and

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automatically generating a graphical representation that visually identifies the

plurality of data elements and the plurality of relationships between the data elements

contained within the data definition file.

10. (original): The method of claim 9, wherein the graphical representation

corresponds to an XML structure diagram.

11. (original): The method of claim 9, wherein the data definition file corresponds to

a Document Type Definition file.

12. (currently amended): The method of claim 9, wherein the step of automatically

generating a graphical representation comprises the step of automatically generating a

diagram for each data element, the diagrams having names corresponding to the data

elements.

13. (currently amended): The method of claim 12, wherein the step of automatically

generating a graphical representation further comprises the steps of:

automatically determining whether the data structure contains an attribute for one of

the data elements; and

when it is determined that the data structure contains an attribute for one of the data

elements,

automatically displaying a graphical representation of the attribute with the diagram

corresponding to the one data element.

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14. (currently amended): The method of claim 12, wherein the step of <u>automatically</u> generating a graphical representation further comprises the steps of:

    <u>automatically</u> identifying a first of the relationships as an element reference between two of the data elements; and

    <u>automatically</u> displaying a reference link from the diagram associated with a first of the two elements to the diagram associated with a second of the two elements.

15. (currently amended): The method of claim 14, wherein the step of <u>automatically</u> identifying a first of the relationships comprises the step of <u>automatically</u> determining whether the name of the second element is within the definition of the first data element.

16. (currently amended): The method of claim 12, wherein the step of <u>automatically</u> generating a graphical representation further comprises the steps of:

    <u>automatically</u> identifying a second of the relationships as a group reference between two of the data elements;

    <u>automatically</u> displaying a group symbol; displaying a first link between the group symbol and the diagram that is associated with a first of the two elements; and

    <u>automatically</u> displaying a second link between the group symbol and the diagram that is associate with a second of the two elements.

17. (currently amended): The method of claim 16, wherein the step of <u>automatically</u> identifying a second of the relationships comprises the steps of:

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automatically determining whether the data structure includes a group attribute

identifying the first data element as a group attribute member; and

automatically determining whether the definition of the second data element contains

the group attribute.

18. (currently amended): The method of claim 9, further comprising the step of

storing information used to automatically generate the data model in a graphical view file.

19. (currently amended) A method in a data processing system, the method

comprising the steps of:

receiving a request to generate a data definition file from a graphical representation

having a plurality of data element diagrams, each data element diagram having a name;

automatically adding a data element identifier in the data definition file for each data

element diagram in the graphical representation;

automatically adding the name of each data element diagram to the corresponding

data element identifier;

automatically determining whether an attribute is associated with one of the data

element diagrams;

when it is determined that an attribute is associated with one of the data element

diagrams,

automatically adding the attribute to the data element identifier for the one data

element diagram;

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a utomatically determining whether the graphical representation has a reference link

between two of the data element diagrams;

when it is determined that the graphical representation has a reference link between

two data element diagrams,

     automatically adding a reference to the data element identifier corresponding

to one of the two data element diagrams to reflect a link between the two data element

diagrams;

     automatically determining whether the graphical representation has a group

symbol;

       when it is determined that the graphical representation has a group

symbol,

       automatically determining whether the group symbol is a destination

in a first link with a first of the data element diagrams;

       when it is determined that the group symbol is a destination in a first

link with a first of the data element diagrams,

         automatically adding a group definition to the data definition

file that includes the name of the first data element diagram;

         automatically determining whether the group symbol is a

source in a second link with a second of the data element diagrams;

and

         when it is determined that the group symbol is a source in a

second link with a second of the data element diagrams,

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automatically adding to the data element identifier

corresponding to the second element diagram a reference

corresponding to the group definition.

20. (original): The method of claim 19, wherein the graphical representation

corresponds to an XML structure diagram.

21. (original): The method of claim 19, wherein the data definition file corresponds to

a Document Type Definition file.

22. (original): The method of claim 19, wherein the data definition file corresponds to

an XML schema file.

23. (currently amended): The method of claim 19, wherein the step of automatically

adding a reference to the data element identifier comprises the steps of:

automatically identifying one of two data element diagrams as a source of the

reference link and the other as a destination of the reference link; and

automatically adding the name of the destination to the data element identifier

corresponding to the source.

24. (currently amended): A method in a data processing system comprising the steps

of:

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automatically receiving an indication to generate a data definition file from a graphical representation having a plurality of data element diagrams and a plurality of relationships between the data element diagrams, each data element diagram having a name; and

automatically adding a plurality of data element identifiers to the data definition file that reflect the data element diagrams and the relationships between the data element diagrams.

25. (original): The method of claim 24, wherein the graphical representation corresponds to an XML structure diagram.

26. (original): The method of claim 24, wherein the data definition file corresponds to a Document Type Definition file.

27. (currently amended): The method of claim 24, wherein the step of automatically adding the plurality of data element identifiers to the data definition file comprises the step of automatically adding the name of each data element diagram to the corresponding data element identifier.

28. (currently amended): The method of claim 24, wherein the step of automatically adding the plurality of data element identifiers to the data definition file comprises the steps of:

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automatically determining whether an attribute is associated with one of the data

element diagrams;   r.·n鴋:

when it is determined that an attribute is associated with one of the data element

diagram 3, and

automatically adding the attribute to the data element identifier for the one data

element diagram.

29. (currently amended): The method of claim 24, wherein the step of automatically

adding the plurality of data element identifiers to the data definition file comprises the steps

of:

automatically determining whether one of the relationships corresponds to a reference

link between two of the data element diagrams; and

when it is determined that one of the relationships corresponds to a reference link

between two data element diagrams,

automatically adding a reference to the data element identifier corresponding to one

of the two data element diagrams to reflect the reference link between the two data element

diagrams.

30. (currently amended): The method of claim 24, wherein the step of automatically

adding the plurality of data element identifiers to the data definition file comprises the steps

of:

automatically determining whether another of the relationships is associated with a

group symbol;

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when it is determined that the other of the relationships is associated with a group name

symbol,

    automatically determining whether the group symbol is a destination in a first

link with a first of the data element diagrams; and

    when it is determined that the group symbol is a destination in a first link with

a first of the data element diagrams,

        automatically adding a group definition to the data definition file that

includes the name of the first data element diagram.

31. (currently amended): The method of claim 30, further comprising the steps of:

    when it is determined that the group symbol is a destination in a first link with

a first of the data element diagrams,

        automatically determining whether the group symbol is a source in a

second link with a second of the data element diagrams; and

        when it is determined that the group symbol is a source in a second

link with a second of the data element diagrams,

            automatically adding to the data element identifier

corresponding to the second element diagram a reference

corresponding to the group definition.

32. (currently amended): A computer-readable medium containing instructions for

controlling a data processing system to perform a method, the method comprising the steps

of:

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automatically receiving a request to generate a data model from a data definition file containing a data structure with a plurality of data elements, each data element having a name and a definition;

automatically generating a diagram for each data element, the diagrams having names corresponding to the data elements;

automatically determining whether an attribute in the data structure is associated with one of the data elements;

when it is determined that an attribute in the data structure is associated with one of the data elements,

automatically displaying a graphical representation of the attribute with the diagram corresponding to the one data element;

automatically determining whether the data structure includes a reference between two of the data elements;

when it is determined that the data structure includes a reference between two elements,

automatically displaying a reference link from the diagram associated with a first of the two elements to the diagram associated with a second of the two elements;

automatically determining whether the data structure includes a group attribute identifying at least one of the data elements as group attribute member;

when it is determined that the data structure includes a group attribute,

automatically displaying a group symbol;

automatically displaying a first link between the group symbol and the diagram that is associated with the identified at least one data element; and

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automatically displaying a second link between the group symbol and the second of the

the diagram of the data element having the associated group attribute.

33. (original): The computer-readable medium of claim 32, wherein the data model is an XML structure diagram.

34. (original): The computer-readable medium of claim 32, wherein the data definition file is a Document Type Definition file.

35. (original): The computer-readable medium of claim 32, wherein the data definition file is an XML schema file.

36. (currently amended): The computer-readable medium of claim 32, wherein the step of automatically determining whether the data structure includes a reference between two of the data elements comprises the step of automatically determining whether the name of the second element is within the definition of the first data element.

37. (currently amended): The computer-readable medium of claim 32, wherein the step of automatically displaying the second link further comprises the step of automatically determining whether the data element has the associated group attribute.

38. (currently amended): The computer-readable medium of claim 37, wherein the step of automatically determining whether the data element has the associated group attribute

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comprises the step of <u>automatically</u> determining whether the group attribute is within the ~~already de~~ definition of the data element.

39. (currently amended): The computer-readable medium of claim 32, wherein the method further comprises the step of <u>automatically</u> storing information used to generate the data model in a graphical view file.

40. (currently amended) A computer-readable medium containing instructions for controlling a data processing system to perform a method, the method comprising the steps of:

receiving an identification of a data definition file having a plurality of data elements and a plurality of relationships between the data elements, each data element having a name and a definition; and

<u>automatically</u> generating a graphical representation that visually identifies the plurality of data elements and the plurality of relationships between the data elements contained within the data definition file.

41. (original): The computer-readable medium of claim 40, wherein the graphical representation corresponds to an XML structure diagram.

42. (original): The computer-readable medium of claim 40, wherein the data definition file corresponds to a Document Type Definition file.

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43. (currently amended): The computer-readable medium of claim 40, wherein the

step of a̲u̲t̲o̲m̲a̲t̲i̲c̲a̲l̲l̲y̲ generating a graphical representation comprises the step of

a̲u̲t̲o̲m̲a̲t̲i̲c̲a̲l̲l̲y̲ generating a diagram for each data element, the diagrams having names

corresponding to the data elements.

44. (currently amended): The computer-readable medium of claim 43, wherein the

step of a̲u̲t̲o̲m̲a̲t̲i̲c̲a̲l̲l̲y̲ generating a graphical representation further comprises the steps of:

a̲u̲t̲o̲m̲a̲t̲i̲c̲a̲l̲l̲y̲ determining whether the data structure contains an attribute for one of

the data elements; and

when it is determined that the data structure contains an attribute for one of the data

elements,

a̲u̲t̲o̲m̲a̲t̲i̲c̲a̲l̲l̲y̲ displaying a graphical representation of the attribute with the

diagram corresponding to the one data element.

45. (currently amended): The computer-readable medium of claim 43, wherein the

step of a̲u̲t̲o̲m̲a̲t̲i̲c̲a̲l̲l̲y̲ generating a graphical representation further comprises the steps of:

a̲u̲t̲o̲m̲a̲t̲i̲c̲a̲l̲l̲y̲ identifying a first of the relationships as an element reference between

two of the data elements; and

a̲u̲t̲o̲m̲a̲t̲i̲c̲a̲l̲l̲y̲ displaying a reference link from the diagram associated with a first of

the two elements to the diagram associated with a second of the two elements.

46. (currently amended): The computer-readable medium of claim 45, wherein the

step of a̲u̲t̲o̲m̲a̲t̲i̲c̲a̲l̲l̲y̲ identifying a first of the relationships comprises the step of

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automatically determining whether the name of the second element is within the definition of ~ ... me of the

the first data element.

47. (currently amended): The computer-readable medium of claim 43, wherein the

step of automatically generating a graphical representation further comprises the steps of:

automatically identifying a second of the relationships as a group reference between

two of the data elements;

automatically displaying a group symbol;

automatically displaying a first link between the group symbol and the diagram that is

associated with a first of the two elements; and

automatically displaying a second link between the group symbol and the diagram

that is associate with a second of the two elements.

48. (currently amended): The computer-readable medium of claim 47, wherein the

step of automatically identifying a second of the relationships comprises the steps of:

automatically determining whether the data structure includes a group attribute

identifying the first data element as a group attribute member; and

automatically determining whether the definition of the second data element contains

the group attribute.

49. (currently amended): The computer-readable medium of claim 40, wherein the

method further comprises the step of automatically storing information used to generate the

data model in a graphical view file.

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50. (currently amended): A computer-readable medium containing instructions for

controlling a data processing system to perform a method, the method comprising the steps

of:

receiving a request to generate a data definition file from a graphical representation

having a plurality of data element diagrams, each data element diagram having a name;

automatically adding a data element identifier in the data definition file for each data

element diagram in the graphical representation;

automatically adding the name of each data element diagram to the corresponding

data element identifier;

automatically determining whether an attribute is associated with one of the data

element diagrams;

when it is determined that an attribute is associated with one of the data element

diagrams,

automatically adding the attribute to the data element identifier for the one

data element diagram;

automatically determining whether the graphical representation has a

reference link between two of the data element diagrams;

when it is determined that the graphical representation has a reference link

between two data element diagrams,

automatically adding a reference to the data element identifier

corresponding to one of the two data element diagrams to reflect a link

between the two data element diagrams;

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automatically determining whether the graphical representation has a

group symbol;

when it is determined that the graphical representation has a group

symbol,

automatically determining whether the group symbol is a

destination in a first link with a first of the data element diagrams;

when it is determined that the group symbol is a destination in

a first link with a first of the data element diagrams,

automatically adding a group definition to the data

definition file that includes the name of the first data element

diagram;

automatically determining whether the group symbol is

a source in a second link with a second of the data element

diagrams; and

when it is determined that the group symbol is a source

in a second link with a second of the data element diagrams,

automatically adding to the data element

identifier corresponding to the second element diagram

a reference corresponding to the group definition.

51. (original): The computer-readable medium of claim 50, wherein the graphical

representation corresponds to an XML structure diagram.

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52. (original): The computer-readable medium of claim 50, wherein the data

definition file corresponds to a Document Type Definition file.

53. (original): The computer-readable medium of claim 50, wherein the data

definition file corresponds to an XML schema file.

54. (currently amended): The computer-readable medium of claim 50, wherein the

step of adding a reference to the data element identifier comprises the steps of:

automatically identifying one of two data element diagrams as a source of the

reference link and the other as a destination of the reference link; and

automatically adding the name of the destination to the data element identifier

corresponding to the source.

55. (currently amended): A computer-readable medium containing instructions for

controlling a data processing system to perform a method, the method comprising the steps

of:

automatically receiving an indication to generate a data definition file from a

graphical representation having a plurality of data element diagrams and a plurality of

relationships between the data element diagrams, each data element diagram having a name;

and

automatically adding a plurality of data element identifiers to the data definition file

that reflect the data element diagrams and the relationships between the data element

diagrams.

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56. (original): The computer-readable medium of claim 55, wherein the graphical... .... ..:.   .t

representation corresponds to an XML structure diagram.

57. (original): The computer-readable medium of claim 55, wherein the data

definition file corresponds to a Document Type Definition file.

58. (currently amended): The computer-readable medium of claim 55, wherein the

step of automatically adding the plurality of data element identifiers to the data definition file

comprises the step of automatically adding the name of each data element diagram to the

corresponding data element identifier.

59. (currently amended): The computer-readable medium of claim 55, wherein the

step of automatically adding the plurality of data element identifiers to the data definition file

comprises the steps of:

automatically determining whether an attribute is associated with one of the data

element diagrams; and

when it is determined that an attribute is associated with one of the data element

diagrams,

automatically adding the attribute to the data element identifier for the one

data element diagram.

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60. (currently amended): The computer-readable medium of claim 55, wherein the step of <u>automatically</u> adding the plurality of data element identifiers to the data definition file comprises the steps of:

<u>automatically</u> determining whether one of the relationships corresponds to a reference link between two of the data element diagrams; and

when it is determined that one of the relationships corresponds to a reference link between two data element diagrams,

<u>automatically</u> adding a reference to the data element identifier corresponding to one of the two data element diagrams to reflect the reference link between the two data element diagrams.

61. (currently amended): The computer-readable medium of claim 55, wherein the step of <u>automatically</u> adding the plurality of data element identifiers to the data definition file comprises the steps of:

<u>automatically</u> determining whether another of the relationships is associated with a group symbol;

when it is determined that the other of the relationships is associated with a group symbol,

<u>automatically</u> determining whether the group symbol is a destination in a first link with a first of the data element diagrams; and

when it is determined that the group symbol is a destination in a first link with a first of the data element diagrams,

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automatically adding a group definition to the data definition file that includes

the name of the first data element diagram.

62. (currently amended): The computer-readable medium of claim 61, wherein the
method further comprises the steps of:

when it is determined that the group symbol is a destination in a first link with a first

of the data element diagrams,

automatically determining whether the group symbol is a source in a second

link with a second of the data element diagrams; and

when it is determined that the group symbol is a source in a second link with a

second of the data element diagrams,

automatically adding to the data element identifier corresponding to

the second element diagram a reference corresponding to the group definition.

63. (currently amended): A data processing system comprising:

a secondary storage device comprising a first data definition file having first data

elements and relationships between the first data elements;

a memory device further comprising a program that receives a first request to

automatically display a first graphical representation of the first data definition

file such that the first graphical representation has first data element diagrams

and relationships between the first data element diagrams reflecting the first

data elements and the relationships between the first data elements contained

in the first data definition file, that displays the first graphical representation

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responsive to receiving the first request, that displays a second graphical

representation having second data element diagrams and relationships

between the second data element diagrams, that receives a second request to

generate a second data definition file from the second graphical representation

such that the second data definition file has second data elements and

relationships between the second data elements reflecting the second data

element diagrams and the relationships between the second data element

diagrams of the second graphical representation, and that <u>automatically</u>

generates the second data definition file responsive to receiving the second

request; and

     ε. processor for running the program.

64. (original): The data processing system of claim 63, wherein the first data

definition file corresponds to a Document Type Definition file.

65. (original): The data processing system of claim 63, wherein the second data

definition file corresponds to a Document Type Definition file.

66. (original): The data processing system of claim 63, wherein the program further

stores the second graphical representation in a second graphical view file on the secondary

storage device.

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67. (original): The data processing system of claim 63, wherein the program further

stores the second data definition file on the secondary storage device.

68. (original): The data processing system of claim 63, wherein the secondary storage

device further comprises an XML data structure module that includes XML constructs

corresponding to a Document Type Definition specification.

69. (original): The data processing system of claim 68, wherein the program uses the

XML constructs to add the plurality of data element identifiers to the first data definition file

and to parse the plurality of data elements contained in the second data definition file.

70. (currently amended): A system comprising:

means for receiving an identification of a data definition file having a plurality of data

elements and a plurality of relationships between the data elements, each data element having

a name and a definition; and

means for automatically generating a graphical representation that visually identifies

the plurality of data elements and the plurality of relationships between the data elements

contained within the data definition file.

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